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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/541,307
Filing Date: April 10, 2006
Appellant(s): ACKERMAN ET AL.

Jacob A. Doughty

For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 10/24/08 appealing from the Office action mailed 4/24/08.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows:

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner.

Rejection of claims 1-3 under 35 USC 112 1st paragraph is withdrawn. Upon further review Examiner has concluded that there is sufficient description in the specification to support the claim language of "wherein dividing the bottom effluent from the vacuum evaporation stage comprises selecting a proportion of the bottom effluent that will constitute the first portion based on current catalyst activity".

Rejection of claims 1-3 and 7-15 under 35 USC 112 1st as failing to comply with written description requirement is withdrawn. Upon further review Examiner concludes that there is sufficient support in the specification, particularly in the figures 1-4, for dividing the stream into 4 portions. Labeling the portions as 1st 2nd 3rd and 4th merely clarifies the invention to the public and does not introduce a new concept.

Rejection of claims 1-22 under 35 USC 112 2nd paragraph is withdrawn. Upon further review Examiner has concluded that there is sufficient description in the specification particularly in the figures 2-4 to clearly convey to one skilled in the art that

the stream is divided into 2nd and 4th portions. Examiner agrees with Appellants' assertion that no steps directed to further processing of the said potions are required in order to practice the instant invention as claimed.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Geisendoerfer et al. - US Patent Publication 2004/0171868 A1.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections – 35 USC 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 20-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to

one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no evidence in the record for the claim language of "wherein the first portion is recycled directly to the reaction apparatus" and "wherein the third portion is recycled directly to the reaction apparatus", at the time of filing the application.

Additionally, the suggested new claims raise an issue of new matter. Appellants refers to Figures 2-4, however, the Examiner is not convinced that the figures demonstrate this portioning and direct recycling to the reaction apparatus. Nor is there a convincing description of the figures within Appellants' specification which would support these new claims. This amounts to a new concept that was not present at time of filing.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in regards to the "current catalyst activity". It is unclear what defines this current catalyst activity. Does the first portion increase the current catalyst activity or decrease it? Is the first portion selected and divided based on an active or inactive catalyst? Clarification is requested.

Claim Rejections – 35 USC 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Geisendoerfer et al. (US Patent Publication 2004/0171868 A1). The following rejection has been made in the office action mailed 4/11/07 and has been maintained throughout the prosecution of the instant application. Additional arguments (from the office action mailed 4/24/08) addressing the most recent amendments is hereby incorporated into the original rejection.

Scope of prior art

Geisendoerfer et al. teaches a process for the preparation of higher (meth)acrylic esters by transesterifying a lower (meth)acrylate, including methyl (meth)acrylate, with an alcohol, in the presence of a catalyst or catalyst mixture (page 4, section 81, 86, 89, 90 and 91). The alcohol includes n-butanol (page 5, section 95, line 1) and the catalyst is a homogeneous titanate alcoholate (page 5, section 109, lines 3-4). In a vacuum evaporation stage, as shown by the reduced pressure of 100-200 mbar (page 9, section 191), the bottom effluent product is divided (page 8, section 189), and recycled back to the reaction apparatus for further transesterification (page 8, section 190). Furthermore, the bottom effluent from a thin-film evaporator (page 8, section 167) is divided and partly fed back to the reaction apparatus for transesterification (page 8, section 170).

The bottom effluent mixture to be recycled partly from the thin-film evaporator to the transesterification reaction apparatus, is in the amount of 60-95% (page 8, section 170, line 2).

Difference between instant claims and prior art

Geisendoerfer et al. fails to teach the exact percentage of the bottom effluent that is recycled to the transesterification reaction apparatus as recited in the instant claims 7-9 and 13-15.

Geisendoerfer et al. also fail to teach: "selecting a portion of the bottom effluent that will constitute the first portion based on the current catalyst activity" (claim 1, last 3 lines).

Geisendoerfer et al. also fail to teach process, in which an intermediate work-up process in not required, for the recycled portions of a bottom effluent being recycled to the reaction apparatus i.e. direct recycling of the portion.

Obviousness

In reference to claims 7-9, 13-15, Geisendoerfer et al. does not discuss the exact percentage of the bottom effluent that is recycled from the vacuum evaporator to the transesterification reaction apparatus, nor the sum of the percentages of the bottom effluents to be recycled from both the vacuum evaporator and the film evaporator. Though Geisendoerfer et al. does state that the bottom products can be combined and treated (page 9, section 193) and then fed to the transesterification reaction apparatus (page 9, section 194). However, it is the position of the examiner that one of ordinary

skill in the art, at the time of the invention, would through routine and normal experimentation determine the optimization of the percentages of the bottom effluents to be recycled from the vacuum evaporator and the film evaporator, to provide the best effective variable depending on the results desired. The appellants does not show any unusual and/or unexpected results for the percentages stated.

In reference to the limitation of claim 1, directed to selecting a first portion based on the current catalyst activity: In the office action mailed 4/24/08 the following argument is presented concerning the above limitation:

Examiner asserts that Geisendoerfer et al. does teach a process in which a portion of a bottom effluent from a film evaporator and/or a vacuum evaporation stage is recycled to a reaction apparatus based on current catalyst activity. Geisendoerfer et al. teaches catalyst removal is effected by subjection to a thin-film or flash evaporation (page 8, section 166 and 167) in which the bottom product which contains the catalyst (page 8, section 169) is partly recycled back into the reaction apparatus (page 8, section 170). In addition, Geisendoerfer et al. teaches that there are advantages to interchanging and combining these steps based on exposure to the catalyst and so that catalyst-induced secondary or subsequent reactions are reduced (page 8, section 172 and 173). Thus, Geisendoerfer et al. envisions a link to the process steps and catalyst activity.

In reference to process, in which an intermediate work-up process is not required, for the recycled portions of a bottom effluent being recycled to the reaction apparatus i.e. direct recycling of the portion.

Examiner asserts that Geisendoerfer et al. does teach that a portion of the bottom mixture is partly recycled directly to the transesterification reaction apparatus (page 8, section 170). In addition, the art teaches that there are advantages to interchanging, combining and giving preference to certain steps (page 8, section 171 and 173).

Therefore, it would be prima facie obvious to one of ordinary skill in the art at the time of the invention, to optimize the bottom effluent percentages and to select the portions to be recycled back to the apparatus based on catalyst activity. The expected result would be an improved process for the preparation of (meth)acrylates, while recycling the homogeneous titanium catalyst.

It would also be obvious to one skilled in the art to determine how much of the recycled catalyst to add to the reaction chamber and to base that determination on the current performance of the catalyst. It is also obvious to directly recycle the bottom mixture to the reaction apparatus.

(10) Response to Argument

(I): Concerning rejection of claims 20-22 under 35 USC 112, 1st paragraph

On page 7, lines 8-17. Appellants argue that Figures 2 to 4 show direct recycling from the film evaporator **5** to the reaction apparatus **1** via line **18**. This is not found persuasive. Examiner is interpreting the term "directly recycled" to mean that there are no apparatus components in between the component from which the recycled matter

originated and the component for which it is destined. In the instant case, this means the stream encounters no apparatus components from the film evaporator **5** to the reaction apparatus **1** as shown in figures 2-4. However, according to the figures 2-4 the stream exiting the bottom of the film evaporator **5** first enters the high boiler distillation column **4**. Examiner therefore concludes that a direct recycling from the film evaporator **5** to the reaction apparatus **1** is not supported by the specification. The said limitation therefore both lacks written description and is a new matter.

(I): Concerning rejection of claims 1-22 under 35 USC 112, 2nd paragraph

On page 8, last paragraph – page 9, line 11 appellants argue that the term "current catalyst activity" is not indefinite. Appellants direct to the specification, page 13 lines 8-11. In the argument the Appellants also describe the catalysts activity as "...its ability to facilitate a high yield of the desired product" (page 8, last line). This argument is not found persuasive. Page 13 lines 8-11 describe how the amount of the recycled catalyst is controlled. The definition of the term "current catalyst activity" is not provided. The claims in view of the specification do not teach one skilled in the arts which activity of the catalyst is to be taken into consideration. The indefiniteness arises from the fact that the term "current catalyst activity" could be interpreted in various ways. For example, is it the activity that produces the desired product in the reaction chamber? Or is it the activity that is responsible for the production of the byproducts? Or, since the catalyst presence is not limited to the reaction apparatus **1**, is it perhaps activity of the catalyst in another portion of the whole apparatus that is an undesired

activity that needs to be controlled? Is the current catalyst activity of the catalyst in the reactor, or is it in the portion to be recycled? Since numerous interpretations of the said term are possible, and no clear definition is provided, the rejection under 35 USC 112 2nd paragraph is deemed proper.

(I): Concerning rejection of claims 1-22 under 35 USC 103(a)

On page 10, last paragraph through page 11. Appellants argue that the rejection of claims 1-3 is improper because Geisendoerfer fails to teach selecting a portion of the bottom effluent based on current catalytic activity. Examiner believes that Geisendoerfer provides sufficient direction to one skilled in the arts in order to render the above limitation obvious. As was discussed in Apr 24, 2008 office action on page 7, in the reply to Appellants' arguments concerning this rejection, Geisendoerfer teaches recycling of the bottom mixture into the transesterification reactor (page 8, paragraph [0170] first two lines). In paragraph [0172] Geisendoerfer teaches that reduction of catalyst induced secondary reactions is a consideration one skilled in the arts needs to take into account when practicing the invention (last 4 lines of the paragraph). Examiner therefore maintains the position that recycling of the bottom effluent into the reaction apparatus is obvious. It is also obvious to do the said recycling based on the current catalytic activity. Since recycling involves adding reagents back into the reactor and it is well known to be desirable to maintain reagent concentrations within optimal ranges for a given reactor one skilled in the arts would find it obvious to recycle an appropriate portion of the reagents in order to maintain optimal operation of the reactor.

Since the art teaches considerations involving catalytic activity (paragraph [0172]) one skilled in the arts would find it obvious to take catalytic activity into consideration. In essence, the claim limitation merely identifies catalyst activity as a result effective variable used to optimize recycling back to the reaction chamber. However, at the time the invention was made, one of skill in the art would have recognized that catalyst activity is a result effective variable as clearly evidenced by the cited teachings from Geisendoerfer. Therefore, it would have been obvious to one of skill in the art at the time the invention was made to optimize the amount of effluent recycled back to the reaction chamber based on activity of the catalyst.

On page 12, line 1- page 13 last paragraph, appellants argue that Geisendoerfer fails to teach direct recycling of the bottom portion into the transesterification reactor as required by the instant claims 20-22, but rather Geisendoerfer teaches subjecting the said portion to a residue workup (appellant directs to paragraphs [0192] and [0201]).

Examiner disagrees with appellants arguments and believes the rejection should be maintained. Paragraphs [0192] and [0201] are directed to treatment of the residue. Said residue is obtained after a portion of the bottom mixture is recycled directly to the transesterification (see paragraph [0170] first 4 lines). The stream from which the bottom mixture is obtained can come from either thin film or flash evaporation, wherein the flash evaporation is performed at a significantly reduced pressure (paragraph [0167]). It is therefore obvious to recycle directly to the transesterification reactor after either one of the above-listed techniques.

On page 13 of the appeal brief appellant argues the beneficial aspects of the particular sequence of steps disclosed in Geisendoerfer. The said argument is not considered relevant because the instant claims are not limited to a particular sequence of steps. Appellant is arguing limitations not present in the instant claims. Such arguments should not overcome the rejection of record.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Conclusion

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Yevgeny Valenrod/

Examiner, Art Unit 1621

Conferees:

/Daniel M Sullivan/

Supervisory Patent Examiner, Art Unit 1621

/James O Wilson/

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